Workplace Charging
National Drive Electric Week Webinar Series

- Zach Henkin, Forth Mobility
- Stephanie Byrd, Schneider Electric
- Durand Crutchfield, Southwest Airlines
- Dave Aasheim, ChargePoint
Conference Line

For Audio, dial:

1-800-250-3900

Participant PIN: 55197039#
Workplace Charging: Good for Business; Great for employees

Zach Henkin, Deputy Director

September 2017
Who we are:

- Nonprofit (501c6 & 501c3)

- Mission: Forth is transforming the way we get around. Through innovation, demonstration projects, advocacy and engagement, we are advancing electric, smart, and shared transportation in the Pacific Northwest and beyond.

- Funded by grants, member companies, and Roadmap—our annual conference

- Membership 120+ companies, utilities, local governments, other stakeholders
WHY INSTALL ELECTRIC VEHICLE CHARGERS AT YOUR WORKPLACE?

Boost Your Brand and Your Bottom Line

- Make your parking lot your best marketing tool
- Decrease your carbon footprint
- Earn LEED points
- Attract and retain innovative employees

52% of employees believe their employers should be doing more for the environment

20x Employees with workplace charging are 20 times more likely to drive an electric vehicle

Energize Employees with a Low-Cost Perk

- Health insurance $8.25/day
- Gym membership $4.16/day
- Company cell phone $3.40/day
- Coffee $2.50/cup

LEVEL 2 CHARGING < $1.50/day
LEVEL 1 CHARGING < $0.60/day

41m vehicles on the road will be electric by 2040
Urban living and charging woes

- Our population is increasingly urbanizing (more than half of world's population live in cities).
- Thousands more EVs will be on the road soon.
- If you have access to EV charging at work you are 20x more likely to buy a plug-in.
Workplace Charging means more eVMT

- Supports the commute of more drivers
- Allows for unplanned trips after work and during the day
- Supports a positive transportation choice similar to transit or bicycling
- Supportive to “new” EV drivers who may not have charging at home
Workplace Charging Value Proposition

Incentivizes Employees

Signals Corporate Leadership

Complements Sustainability Efforts
Employer Benefits: Inexpensive to Provide Instrumental To Attract and Keep Great Talent

- Recruit and retain great employees
- Contribute to clean air and a healthy community
- Show leadership in your space
- Show leadership in sustainability
- Appeal better to existing and new clients

If you want to attract the best people and top talent, EV charging is a must-have...It’s a recruitment tool.

-Peter Graf, SAP’s Chief Sustainability Officer
Build ‘Range Confidence’ by ensuring drivers have access to at least 2 or 3 charging options.
Workplace Charging Sells EVs

The mobile showroom... with plugs
The biggest challenges

- Installation cost
- Making charging available to those who need it most
- Getting people to move their cars once charged up
- Pleasing everyone
- Implementing consistent use policies across all sites
Helpful tips

- Get an **Executive** sponsor, preferably one with an EV
- Choose your install locations carefully, tearing up pavement and laying new electrical conduit is **expensive**
- Take advantage of opportunistic construction projects
- Have projects **shovel ready** in case excess funding becomes available
- Be aware of **local regulations** that may restrict if and how you can charge for charging
- **Claim LEED points**
- Put in **extra electrical capacity for future expansion**
- If you can’t get funding for chargers, find a way to get them for **free**
Questions?

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The Schneider Electric workplace charging story

Stephanie Byrd
Schneider Electric
GLOBAL SPECIALIST IN ENERGY MANAGEMENT AND AUTOMATION
Tip: High-level executive buy-in and policy goal!
Our charging footprint

- 24 Locations, 87 charging connectors
  - Most sites have 2-3 dual Level 2; two locations with a DCFC
  - Generally non-networked with RFID for access control; few networked

- 1-8 EV drivers per site
  - Six locations have 10+ drivers
  - Top locations are LaVergne, TN (20) and Lake Forest, CA (24)

Tip: Start with pilot program
Project and Installation

- Facility manager in charge
- Procurement for Schneider was a no brainer. But for others, consider cost, simplicity, and incentives.
  - Don’t forget about life-cycle costs
- Benefits of wall-mounted units verses free-standing units
- Local electrician completed installation
- Consider additional infrastructure required
Tip: Have a launch party!
As part of SWA’s initiatives for a greener planet

- We have six EV Charging Stations on HDQ campus
- We can charge twelve electric vehicles at a time
- These are placed as a service to our employees
- Employees get home from work in a green way

- The EV Chargers power source is 40% wind/solar
- Our new Wings building will have two chargers for four vehicles charging
We charge for free at Southwest
The chargers on a 1\textsuperscript{st} come, 1\textsuperscript{st} serve
We move the vehicle after 4 hours of charging as a courtesy
We are looking at free charging for 4 hours then a parking fee
Workplace Charging

Dave Aasheim - Sales Director

Agenda

1. Electric Vehicle Basics
2. Charging Basics
3. Why Do Employers Install EVSE?
4. Benefits to Employees
5. Pricing Strategies
6. Features that Help Utilization/Scalability
EV Sales Are Growing

Over 686,000 cumulative EVs sold through August 2017
EV Models in USA

**Plug-In Models**

30+ currently available with many more coming in 2018

**Plug-In Hybrid EV (PHEV)**
- Toyota Prius Prime
- Chevy Volt
- Toyota Prius Plug-in
- Cadillac ELR
- Mercedes S 550
- BMW 740e
- Chrysler Pacifica Plug-In
- Ford Fusion Energi
- BMW X3 xDrive40e
- Ford C-Max Energi
- Volvo XC90
- BMW 330e
- Hyundai Sonata Plug-In
- BMW i8
- Porsche Panamera S E
- Porsche Cayenne S E
- Audi A3 e-tron

**Battery EV (BEV)**
- Toyota Rav 4 EV
- Honda Fit
- smart EV
- Ford Focus Electric
- Fiat 500 E
- Toyota Prius Prime
- Chevy Bolt EV
- Nissan LEAF
- BMW i3
- Tesla Model S
- Tesla Model X
- Hyundai Ioniq Electric
- VW e-Golf
- Chevy Spark
- Kia Soul EV
- Mitsubishi i-MiEV
- Mercedes B Class

**BEV with DC Fast Charge**
- BMW X5 xDrive40e
- Hyundai Sonata Plug-In
- Chevy Spark
New EV Models
Charging Basics

- Charging Levels and vehicle compatibility
  - **All** electric vehicles are compatible with Level 2 (AC) charging
  - **Some** all-electric vehicles are compatible with DC Fast charging

<table>
<thead>
<tr>
<th></th>
<th>Level 1 (AC)</th>
<th>Level 2 (AC)</th>
<th>DC Fast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Specs</strong></td>
<td>110 – 120 Volts AC 12 – 16 Amps (home appliance)</td>
<td>208/240 Volts AC 15 - 30 Amps (home washer/dryer, commercial standard)</td>
<td>208 to 480 Volts DC 70 – 125 Amps (commercial standard)</td>
</tr>
<tr>
<td><strong>Range Per Hour of Charging</strong></td>
<td>~6 – 8 miles (1.8 kW)</td>
<td>~15 – 30 miles (3.3 - 6.6 kW)</td>
<td>100-200 miles + (25 – 50+ kW)</td>
</tr>
<tr>
<td><strong>Typical Time for Full Charge</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>~12 hours</td>
<td>~3 - 4 hours</td>
<td>~25 - 45 mins</td>
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<sup>1</sup> EV with 80 mile range (average of Top 8 Selling mass-market EVs in 2016)
All EVs can use Level 2 EVSE
Level 2

J1772 Connector

Tesla Adaptor
## Networked vs. Non-Networked

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<th>Capability</th>
<th>Networked Chargers</th>
<th>Non-Networked Chargers</th>
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<tbody>
<tr>
<td>Offer electricity</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Visibility to drivers (through mobile app, in-dash navigation)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Ability to charge and recover cost (by kWh, hours of usage, time of use, etc.)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Access control (employees only, public, loyalty rewards)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Remote access and maintenance (check status, availability, etc.)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Analytics (usage, # of unique drivers, charging behavior, utilization, revenue, and costs)</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Sustainability reporting (GHG savings, fuel savings)</td>
<td>✓</td>
<td>✗</td>
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Why Do Employers Install EV Charging Stations?

- Attract & Retain Top Talent
- Increase Employee Satisfaction & Productivity
- Make Your Benefits Package More Competitive
- Improve Corporate Image
- Achieve Corporate Sustainability Goals
Benefits for Employees

- Save Thousands of Dollars in Fuel Costs
  - Equates to a 5% raise
- Drive Their Preferred Car to Work
- Achieve Personal Sustainability Goals
Workplace Case Studies

Corporation 1: Attract and Retain Perk
Offer charging as perk to employees
- Attract and retain good employees
- Offer charging as a free perk exclusively to employees
- Absorb energy costs as benefit to the employees

Corporation 2: Cost Effective Benefit
Offer charging as benefit but recover costs
- Attract and retain good employees
- Recover deployment cost over time
- Transfer the energy cost to the drivers
Workplace Case Studies

Category 1: No charge to charge
  ▶ Apple, Google, Facebook

Category 2: Flat fee per Hour
  ▶ eBay ($0.75/hour, with $0.75 minimum)

Category 3: Flat fee per kWh
  ▶ Pixar ($0.25/kWh)

Category 4: Taxi pricing
  ▶ HP, Oracle (Free, then $$)
EV Station Owner Needs

- Control Access
- Monitor Usage
- Set and Forget
- Recover Money
- Connect with Drivers
- Visibility
- Easy Maintenance
- Ability to Plan for Growth - Scalability
EV Driver Needs

**Station availability and use**

- Reliable and easy
- Simple payment mechanism and ease of use

**Locate stations**

- Find available stations on web/mobile app
- Know “status” of the station before they arrive
- Know charging rate

**Charging alerts**

- Charging status to inform EV drivers and alert to critical situations
- Features like “Waitlist” or Reservations
## Features that Help Utilization & Scalability

<table>
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<tr>
<th>ChargePoint Innovation</th>
<th>Why It Matters</th>
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<tr>
<td><strong>Waitlist</strong></td>
<td>Improve station utilization</td>
</tr>
<tr>
<td></td>
<td>Make it even easier for drivers to charge their cars</td>
</tr>
<tr>
<td><strong>Power and energy management</strong></td>
<td>Reduce installation and ongoing costs</td>
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<td>Intelligently charge more cars with available power</td>
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<tr>
<td><strong>Powerful administrative controls</strong></td>
<td>Delegate configuration, station access rights, and reports, to others</td>
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<tr>
<td></td>
<td>(tenants, different business units, other organizations)</td>
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<tr>
<td><strong>Advanced pricing features and Wizard</strong></td>
<td>Promote EV etiquette and automatically incorporate “Best Practices” into pricing policies</td>
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<tr>
<td><strong>Integrated video display</strong></td>
<td>Inform drivers how to use stations</td>
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<td>Launch promotions, convey brands</td>
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Waitlist

- Increase station utilization
  - Hosts have seen 20% improvement after waitlist implemented
- Improve employee productivity
  - Automatic notifications; no need to constantly track station status
- Do away with spreadsheets, emails, texts...
  - Simple, integrated solution
- Give drivers peace of mind
  - Fair and easy access to a port when needed
- Identify drivers who don’t move their vehicles promptly
  - Promote EV etiquette

Waitlist lets drivers get in line to charge, with automatic notifications when they’re up

Tap your card to join the waitlist
Thank You

For further information on ChargePoint, please contact Dave Aasheim:

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Questions & Discussion
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